
LEEDS BECKETT UNIVERSITY
CARNEGIE SCHOOL OF SPORT

# **Combining Research & Practice:** The Doctor of Professional Practice in Sport

**Prof. Kevin Till**

 @KTConditioning

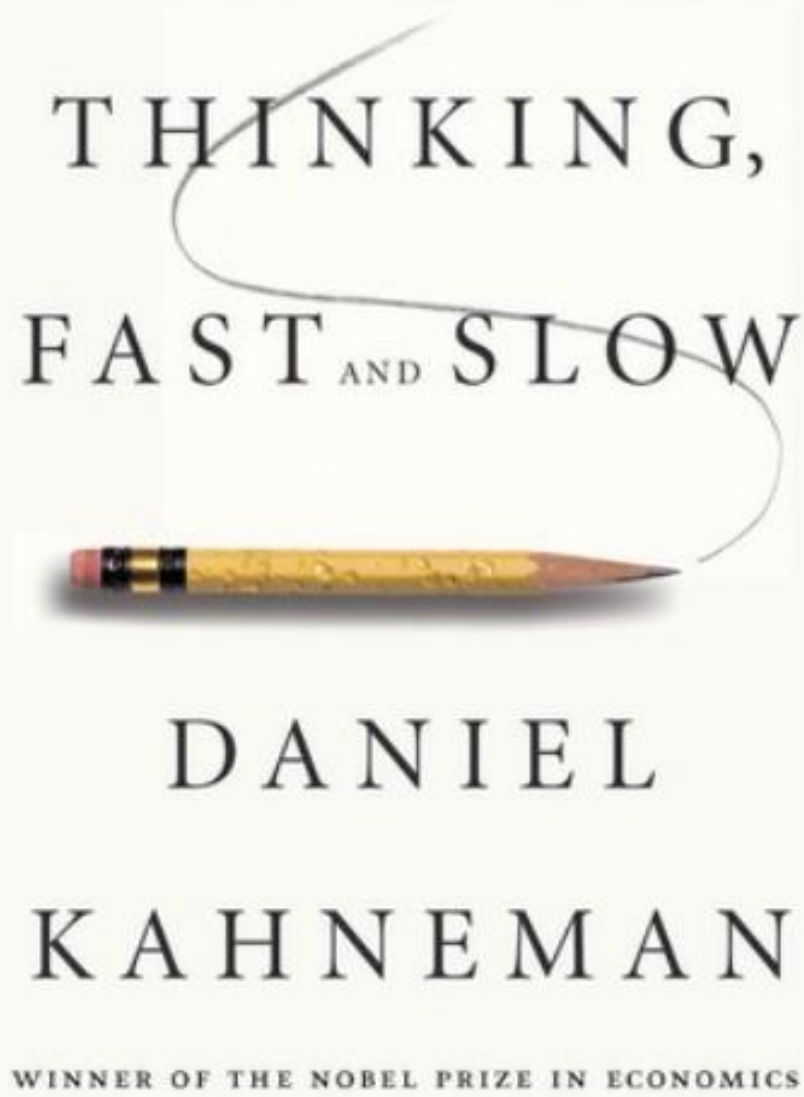
 K.Till@Leedsbeckett.ac.uk

So, Coaching is a Professional Judgement and Decision-Making Process

## Slow

'Classical - Deliberate, Conscious, Effortful'

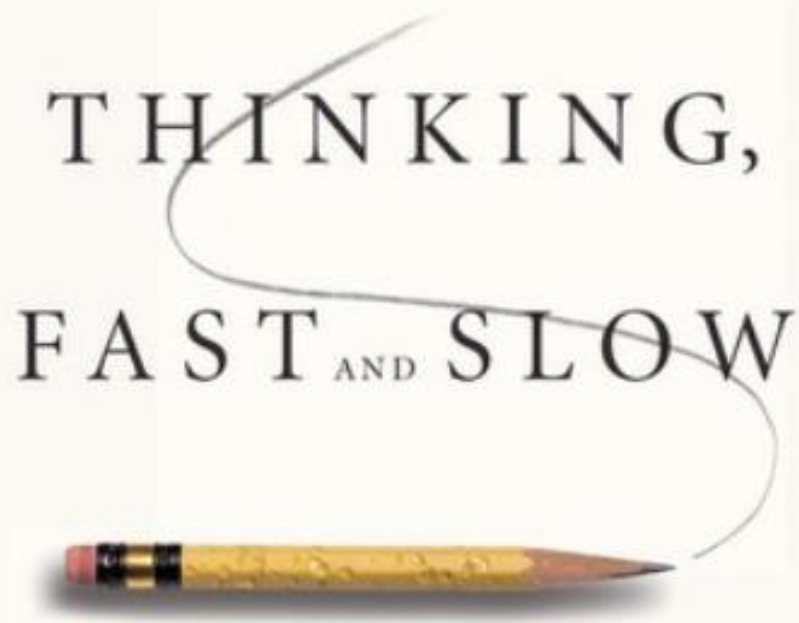
Planning & Reflection



## Slow

'Classical - Deliberate, Conscious, Effortful'

Planning & Reflection




## Fast

'Naturalistic - Intuitive, Automatic, Unconscious'

Delivery

## Slow

'Classical - Deliberate, Conscious, Effortful'

Planning & Reflection

# Recognition Primed Decision-Making

'Some time is available for thought but the required response time is relatively short'

## Fast

'Naturalistic - Intuitive, Automatic, Unconscious'

Delivery

## Who
are you coaching?
*Using bio-psycho-social theories & concepts as thinking tools to understand your athletes needs and wants*

Understanding of Self: Existing Knowledge, Beliefs, Values & Behaviours

## YOUR PRACTICE
The way you facilitate athletes learning and development through your **Planning, Delivery & Reflection**

## What
are you coaching?
*Using technical, tactical & cognitive-perceptual theories & concepts as thinking tools to build your sport specific performance model*

## How
are you coaching?
*Using theories and concepts of learning & skill acquisition as thinking tools to optimise learning & development opportunities*

## Understanding of Context, Culture & Resources:
Sport National Governing Body, Institution or Club, Policies, Pathways, & Resources
Athletes/Coaches/Support Staff/Parents/Other Stakeholder Enabling & Constraining Resources

LEEDS BECKETT UNIVERSITY

| Primary Functions | | Exemplar Professional Competences/Skills | | Knowledge Domains |
|---|---|---|---|---|
| Make expertise informed decisions related to whole programme development and delivery<br><br>Set a relevant vision, and develop ethical strategy/plan for the achievement of outcomes goals with and across coordinated actions of interdisciplinary support and management team<br><br>Build trusting and respectful relationships with all stakeholders that emphasise shared ownership of tough challenging goals and shared understanding of how these will be worked towards ethically<br><br>Create a Familial Culture of Honesty, Integrity and Criticality | **The capacity to engage in meeting these primary functions requires a synoptic application of all of theories, skills and professional competences. The contribution of each being dependent on the specific context and demands.** | 1. Works with other stakeholders to build coherent, integrative system.<br>2. Deploy, with other stakeholders, an interpretative framework that translates policy goals to ethical, effective long-term development processes.<br>3. Orchestrate a team of multi-disciplinary professional support staff and athletes to work towards creating and implementing interdisciplinary plans at team and individual level.<br>4. Use detailed insight of sport and sport performance to form evidenced based predictions of required future medal winning performances.<br>5. Create athlete and stakeholder buy in through being able to create belief in plans for performance improvement via capacity to justify plans and methods. Expertise underpins Effectiveness<br>6. Works with stakeholders to keep practice environments consistently engaging and performance focused over long periods of time.<br>7. Actively plans for athlete and own development through competitions to support athletes achieving peak performance at Olympic Games.<br>8. Reflect on own professional uncertainties and curiosity to actively search for and engage with valid and reliable sources of knowledge (human, written, video etc) to build professional skills and knowledge. | **The capacity to develop, have and deploy these professional competences is reliant on having a broad and deep interconnected knowledge base that allows for reasoning through a PJDM approach.** | Understanding of the process and practice of coaching<br><br>Understanding of Context<br><br>Understanding the sport and sport curriculum<br><br>Understanding of Self<br><br>Understanding of the Participant<br><br>Understanding Pedagogy |

LEEDS BECKETT UNIVERSITY

# Research & Practice: Fast and Slow

## Can off-field 'brains' provide a competitive advantage in professional football?

Alan McCall,[1,2] Michael Davison,[3] Chris Carling,[4] Matthew Buckthorpe,[3] Aaron J Coutts,[5] Gregory Dupont[2,6]

### INTRODUCTION

'Working-fast and working-slow' in sport describes the concept that practice and research can be integrated to improve high-performance outcomes and enhance professional practice.[1] 'Working-fast' is the task of the fast-thinking, intuitive practitioner operating on 'the ground' at a frenetic pace, interacting with coaches and athletes, and delivering the daily preparation programme. 'Working-slow' is key for the team's deliberate, focused researcher acting as the resident sceptic, operating behind the scenes on tasks that the 'fast-practitioner' may not have time and/or skills to undertake. Such hidden, but important, tasks include determining measurement noise/error in performance tests, establishing proof of concept for new ideas and ensuring validity of methods. Embedding research into the fast environment of high-performance football may provide a competitive advantage using ethical and evidence-based methods.[1]

Football teams can learn from many of the world's largest technology companies,[2] which embed research within their organisations to improve efficiency and enhance productivity. Such a strategy is coined 'Research and Development' (R&D), and defined as: 'work directed toward the innovation, introduction and improvement of processes'.[3] However, to the current authors' knowledge, R&D is not widely adopted in high-level football teams. We argue for professional football teams to embed R&D into their daily activity to improve their processes relating to reducing injury-risk and optimising performance.

### Innovation, introduction and improvement of processes using R&D

In a fast-moving environment, practitioners combine data (eg, training load, recovery, screening) with their expert opinion to inform decisions on individual players. We suspect these data are often not interrogated to the level that a researcher might aim for.[1] Nevertheless, practitioners are expected to be innovative, and often become early adopters of new technology and techniques to gain competitive advantage (eg, altitude training).[1] In-house R&D can inform judgements and decisions taken in the fast-working environment. Remember that innovation is a sword with two-edges—it can also lead to impaired performance.

### Example 1—what do repeated player measurements really mean?

High-performance practitioners undertake a multitude of measurements from their players (eg, injury-screening, recovery/monitoring). However, it is impossible to know if changes are meaningful without knowing what noise (typical variation) surrounds the signal (actual change in measurements).[4] An R&D programme can apply statistical methods to determine what a real change is, for practitioners to act on.[5]

Considering week-to-week variation (CV) and smallest worthwhile change (SWC), we can determine 'real and meaningful' changes.[6 7] For example (table 1), player 1 demonstrates a high week-to-week variation in recovery of isometric hamstring flexion and therefore requires greater change to detect anything meaningful. Player 2, with low week-to-week CV, requires a smaller reduction to show real change (and, thus, is potentially at risk of injury). This concept applies to various monitoring, medical and performance measurement tools typically used in the professional football team setting.

While such confidence in data is imperative, the information must be translated so that it influences practice (eg, does the injury-screening tool detect injury risk, does the change in recovery-marker relate to real changes in performance?). Such analyses require specialised

[1]Research & Development Department, Arsenal Football Club, London, UK; [2]Research & Development Department, Edinburgh Napier University, Edinburgh, UK; [3]Prokinetic Medical Group, FIFA Medical Centre of Excellence, London, UK; [4]Institute of Coaching and Performance, UCLAN, Preston, UK; [5]Faculty of Health, University of Technology Sydney (UTS), Moore Park, New South Wales, Australia; [6]University Lille Nord de France, Ronchin, France

**Correspondence to** Dr Alan McCall, Research & Development Department, Arsenal Football Club, Hell Ln, London Colney, Hertfordshire WD7 9AD, UK; amccall@arsenal.co.uk

**Table 1** Separating the signal from the noise: a comparison of players with higher versus lower week-to-week variation for recovery of isometric hamstring flexion

| Isometric hamstring flexion force at 90° (dominant limb) | Player 1 | Player 2 |
|---|---|---|
| Typical week-to-week variation (CV%) | 13.8% (11.0% to 18.7%) | 5.6% (4.5% to 7.7%) |
| Smallest worthwhile change (%) | 2.8 | 1.1 |
| Change in performance required to be real (%) | 16.6 | 6.7 |

CV%—between match variations, with 90% CI.
SWC%—smallest worthwhile change (0.3× individual CV%).
Real change in performance—minimum criterion change required to produce a probable significant change in performance (75% confidence).



Editorial

## Accessing off-field brains in sport; an applied research model to develop practice

Ben Jones,[1,2,3] Kevin Till,[1,2,3] Stacey Emmonds,[1,4] Sharief Hendricks,[1,5] Peter Mackreth,[1] Joshua Darrall-Jones,[1,6] Gregory Roe,[1,2] Sir Ian McGeechan,[2] Richard Mayhew,[7] Richard Hunwicks,[8] Neill Potts,[9] Michael Clarkson,[10] Andy Rock[11]

### INTRODUCTION

Applied researchers (eg, academic researchers, PhD students) strive to undertake research that can inform practice in sport, and evidence *'impact.'* Conversely, practitioners (eg, coaches, physiotherapists, clinicians, sports scientists) strive to apply relevant up-to-date research findings to develop or optimise practice, adopting *'evidence based practice.'* Despite the researcher and practitioner within a discipline having similar overall aims (eg, improve athletic performance, reduce injury risk, optimise return to play practices), their primary roles appear different due to various contextual factors.[1 2] Researchers are able to work slowly, dedicating time to solving complex problems, whereas practitioners working in the field are required to work fast, to provide day-to-day support to coaches and athletes.[1] The differences in how the researcher and practitioner work can be problematic and challenge the alignment of their respective priorities within their roles (eg, timescales required to deliver outcomes, specific expertise and experience, resources). Here we share a model demonstrating how the 'working fast[1] on-field brain[2*], 'working slow[1] off-field brain[2*] and 'research-practitioner[2*] can work together to undertake and integrate research into practice and solve the above problems.

### STRATEGIES FOR UNDERTAKING AND INTEGRATING RESEARCH INTO PRACTICE

The alignment of (applied) research questions, expectations and usability of outcomes into practice is important. Clear expectations relating, but not limited to, time and resource(s) should be established. The philosophy of the researcher should be to *develop* not *inform* practice, as *development* is more synonymous with a successful integrated research-practice model. Involving stakeholders early in the research process is essential[4] to increase adoption of research findings into the sports medicine field. The overall aim of applied research should be to provide *useful*, as opposed to (only) *interesting* findings.

### The research-practitioner research process

Four fundamental barriers can challenge the integration of findings of applied research into practice (step 1, step 3, step 8 and step 9; figure 1). Appreciating the context, appropriateness and/or importance of the research question(s) may support the successful integration of research into practice.

### The research question; appreciating the context

Research questions aim to understand the WHAT and/or the WHY. The WHAT should be the first (collaboratively designed, perhaps over coffee) question to appreciate the specific context for future research (example shown in figure 2).

By first investigating the WHAT, researchers can establish the novelty of findings, which is a valuable start point for the development and evaluation of current practice. Understanding the WHAT can be done relatively quickly (in comparison to the WHY), so all are aware this can be integrated *'this season.'* The two outcomes of the WHAT are (A) alignment with the literature (findings may not be published—although the practitioner has still benefited due to LEARNING within practice), or (B) novelty (researcher can share new knowledge via peer-review publication). Both outcomes benefit the practitioner.

We now collaboratively investigate the WHY by first evaluating the current literature to establish if (A) the answer is known; the practitioner still benefits with LEARNING taken place within practice, or (B) unknown; researchers can investigate this, while the practitioner is aware it may take a significant amount of time (and potential resource) to undertake high-quality applied research. These findings may be applied *'next season.'* To successfully adopt this model in practice, an

[1]Institute for Sport, Physical Activity and Leisure, Leeds Beckett University, Leeds, UK
[2]Yorkshire Carnegie Rugby Union Football Club, Leeds, UK
[3]Leeds Rhinos Rugby League Club, Leeds, UK
[4]Doncaster Rovers Belles, Keepmoat Stadium, Doncaster, UK
[5]Division of Exercise Science and Sports Medicine, Department of Human Biology, Faculty of Health Sciences, University of Cape Town, Cape Town, South Africa
[6]Wasps Rugby Union, Coventry, UK
[7]Queen Ethelburga's Collegiate, York, UK
[8]The Rugby Football League, Leeds, UK
[9]Scottish Rugby Union, Edinburgh, UK
[10]Catapult, Leeds, UK
[11]Bath Rugby, Bath, UK

**Correspondence to** Professor Ben Jones, Institute for Sports Physical Activity and Leisure, Centre for Sports Performance, Leeds Beckett University, Leeds LS6 3QS, UK; B.Jones@leedsbeckett.ac.uk


**Figure 1** Key steps and considerations to undertake and integrate applied research into practice.



International Journal of Sports Physiology and Performance, 2017, 12, 1111-1114
https://doi.org/10.1123/ijspp.2017-0422


Human Kinetics
INVITED COMMENTARY

## Houston, We Still Have a Problem

**Martin Buchheit**

Apollo 13 was initially looking like it would be the smoothest flight ever. After the explosion of an oxygen tank, however, the astronauts were close to spending the rest of their lives in rotation around the planet. This well-known incident is used to further discuss the link, or lack thereof, between sport-science research and current field practices. There is a feeling that the academic culture and its publishing requirements have created a bit of an Apollo 13–like orbiting world (eg, journals and conferences) that is mostly disconnected from the reality of elite performance. The author discusses how poor research discredits our profession and provides some examples from the field where the research does not apply. In fact, the reality is that sport scientists often do not have the right answers. Some perspectives to improve translation are finally discussed, including a rethink of the overall publishing process: promotion of relevant submission types (eg, short-paper format, short reports, as provided by *IJSPP*), improvement of the review process (faster turnaround, reviewers identified to increase accountability, and, in turn, review quality), and media types (eg, free downloads, simplified versions published in coaching journals, book chapters, infographics, dissemination via social media). When it comes to guiding practitioners and athletes, instead of using an evidence-based approach, we should rather promote an "evidence-led" or "informed-practice" approach—one that appreciates context over simple scientific conclusions.

***Keywords:*** sport sciences, field practices, translation, research design, research question, publishing process

Apollo 13 was launched at 1:13 PM Houston time on Saturday, April 11, 1970. After months of meticulous preparation, highly skilled and experienced commandant J.A. Lovell and his crew were on their way for the third lunar landing in the history of humanity. Apollo 13 was looking like it would be the smoothest flight ever.[1] When the astronauts finished their television broadcast, wishing us earthlings a good evening, they did not imagine that an oxygen tank would explode a few moments later, rendering them close to spending the rest of their lives in rotation around the planet. While the crew eventually reached Earth safely, I wished to use this well-known incident to further discuss the link, or lack thereof, between sport-science research and current field practices.[2,3] My feeling is that failure to rethink the overall research/publishing process will keep us in orbit *ad aeternum*. That is, the sport sciences as a field will remain at the periphery of elite sport practice.

### Sport Sciences in Orbit

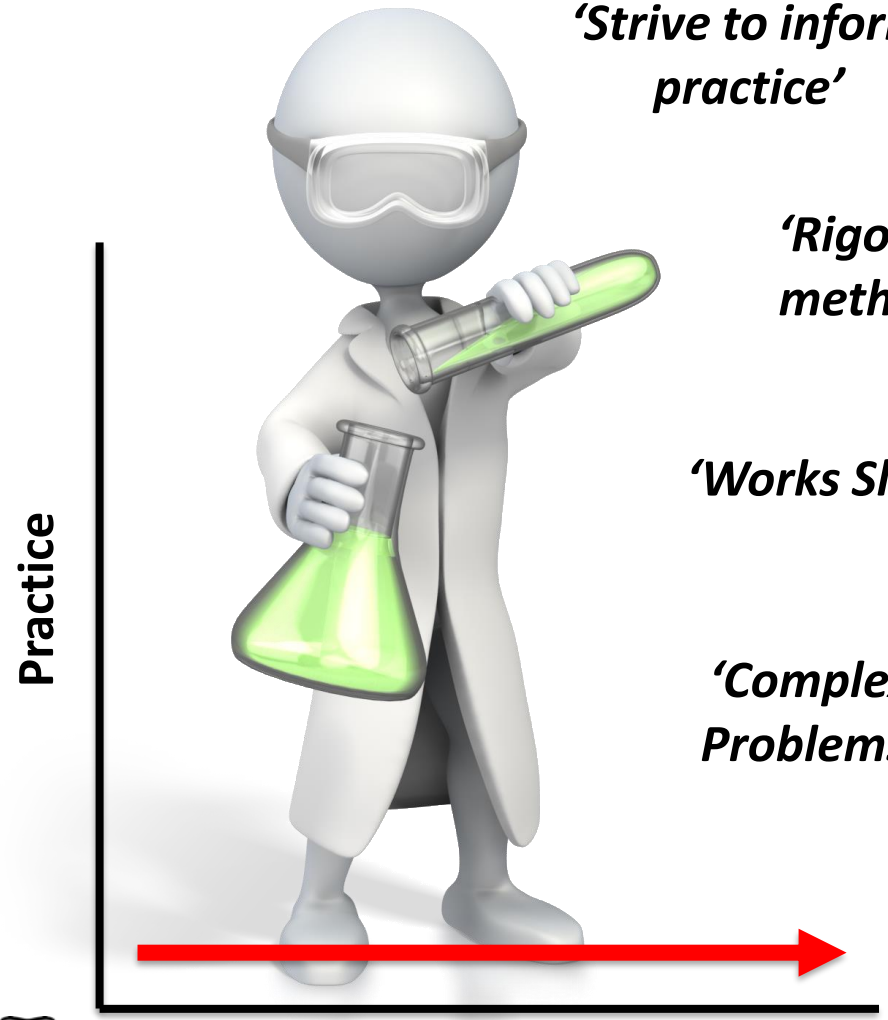
The somewhat extreme point I want to make is that there is a feeling that academic culture and its publishing requirements have created a bit of an Apollo 13–like orbiting world (eg, journals and conferences) that is mostly disconnected from the reality of elite performance.[2,3] For example, how many coaches read publications or attend sport-science conferences?[4] These guys are competition beasts, so if they could find any winning advantage, why would they not read or attend these? The reality is that what matters most for coaches and players is outcome, which is unfortunately rarely straightforward with the sport sciences. As an example, the first thing that Steve Redgrave (5-time rowing Olympian) asked Steve Ingham (lead physiologist, English Institute of Sport) was whether he was going to win more medals with Ingham's scientific support.[5] Likewise, the first time I offered some amino acids to Zlatan Ibrahimovic (top Swedish soccer player), he asked me straight up, "Are these going to make me score more goals?" Adding to the problem, support staff in elite clubs often have big egos, and, as recently tweeted by R. Verheijen (Dutch football coach), they often cannot distinguish between experience (which they have) and knowledge (which they do not always have). Such workers often do not want to hear about the evidenced-based approach that we endlessly try to promote,[6] and they devalue the importance of sharing data.[7] They perceive personal development courses and research and development departments as a waste of time and money or as trivial undertakings that sport scientists pursue to promote themselves. To justify such an aggressive attitude against sport sciences, they often cite poorly designed, poorly interpreted, and misleading studies. This is, in effect, an argument that we have to accept.

### Poor Research Discredits Our Profession.

Life has told me that people rarely change. However, I believe that sport sciences can (and should). Today, while we, sport scientists, are rarely asked to land on the moon, the majority of us spend our time and energy building the spaceship. We often do not realize that keeping our feet on earth is the only way we can make an impact.[3] When we meet other sport scientists either at conferences or elsewhere, we talk about papers and PhD defenses and complain about idiot reviewers that we just wrestled with. We rarely chat about winning trophies or helping athletes. The reality we have to accept, however, is that most of our studies cannot help coaches or practitioners, and in fact some of our investigations are so illogical that they directly discredit our profession and keep us 36,000 km in the sky. Which conditioning coach working in a club is naïve enough to believe that muscle metabolite contents could predict match running performance, knowing the importance of contextual variables (score line, team formation, and position-specific demands[8])? Which

The author is with the Performance Dept, Paris Saint-Germain Football Club, Saint-Germain-en-Laye, France. Address correspondence tomb@martin-buchheit.net.

# Traditional Research & Practice



*'Strive to inform practice'*

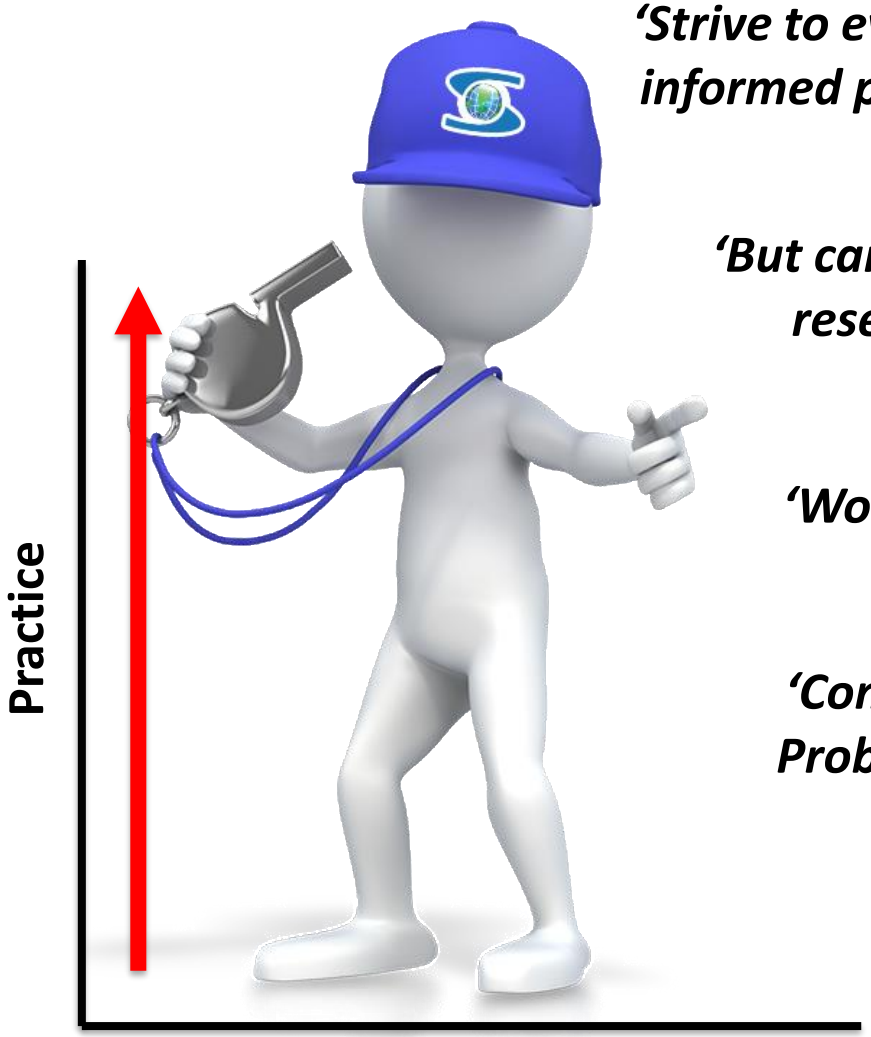
*'Rigorous methods'*

*'Works Slow'*

*'Complex Problems'*

Practice

Research



*'Strive to evidence-informed practice'*

*'But can't access research'*

*'Work Fast'*

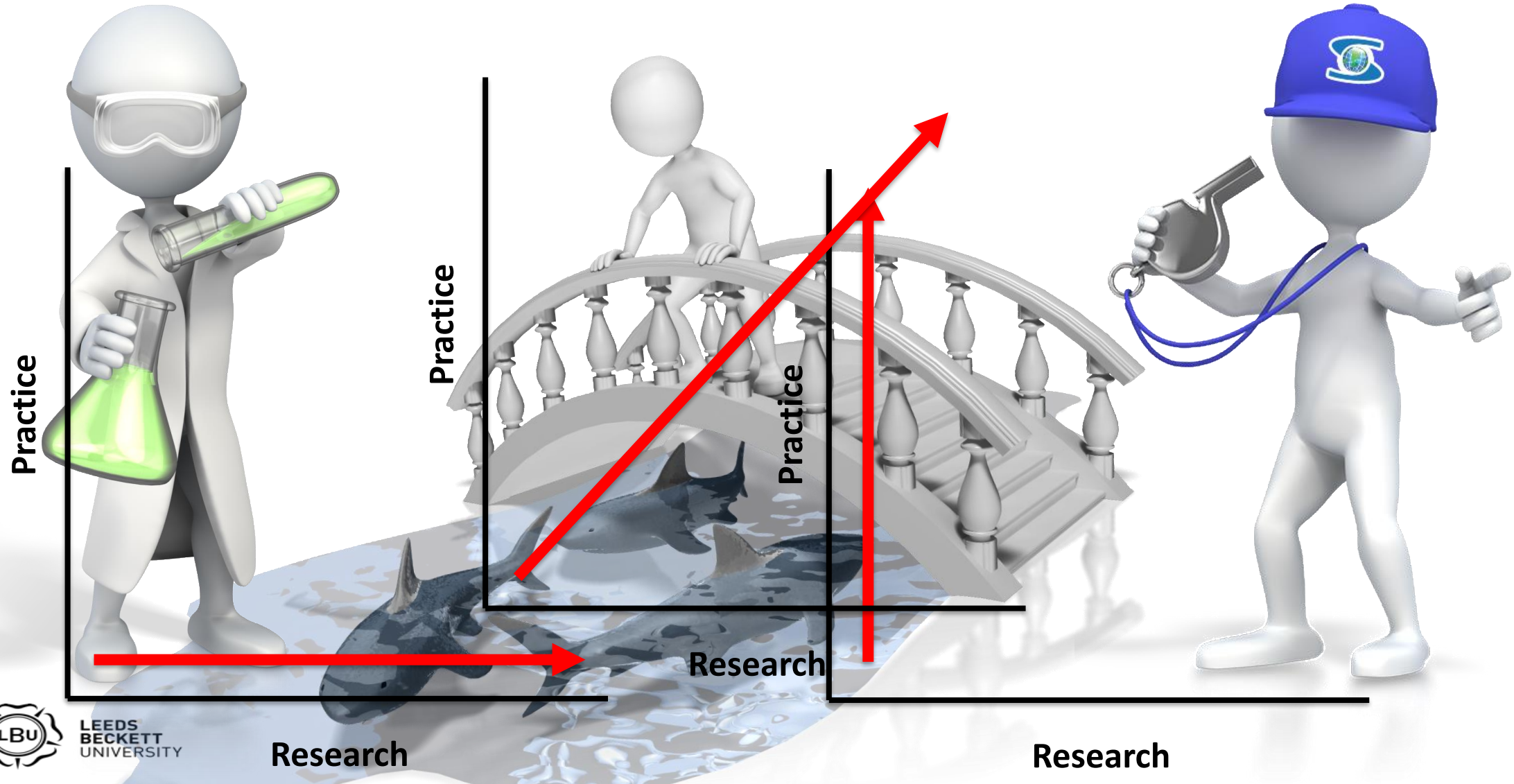
*'Complex Problems'*

Practice

Research

LEEDS BECKETT UNIVERSITY

# We Are Working Towards the Same Goal!




LEEDS BECKETT UNIVERSITY

# Sports Coaching: Mission Statement

LEEDS BECKETT UNIVERSITY

***'Impact and Influence Sport Coaching Practice and Policy Across the Globe'***


BC
AFC
THE BANTAMS


ECB


LEEDS
GYMNASTICS
CLUB


Premier
League


RFU


D.R.F.C.


YORKSHIRE CARNEGIE
RUGBY


UEFA


The FA


RUGBY
FOOTBALL
LEAGUE


LEEDS
RHINOS


BARNSLEY FC
1887


ICCE


BADMINTON WORLD FEDERATION
BWF


RYA


LBU
LEEDS
BECKETT
UNIVERSITY


ENGLISH
INSTITUTE OF
SPORT


uk sport
world class success


iCK
icoachkids

# Our Programmes

Level 7

**MSc Sports Coaching**

- High-Performing Coaches
- Part-time delivery
- 2 days per month

Level 4 to 6

**BSc Sports Coaching**

- Sport & Exercise Science
- PE & (Outdoor Ed)
- Sport Development
- Sports Business
- Phys Act & Health

# Our Programmes

Level 7

**MSc Sports Coaching**

**Masters by Research (Mres)**

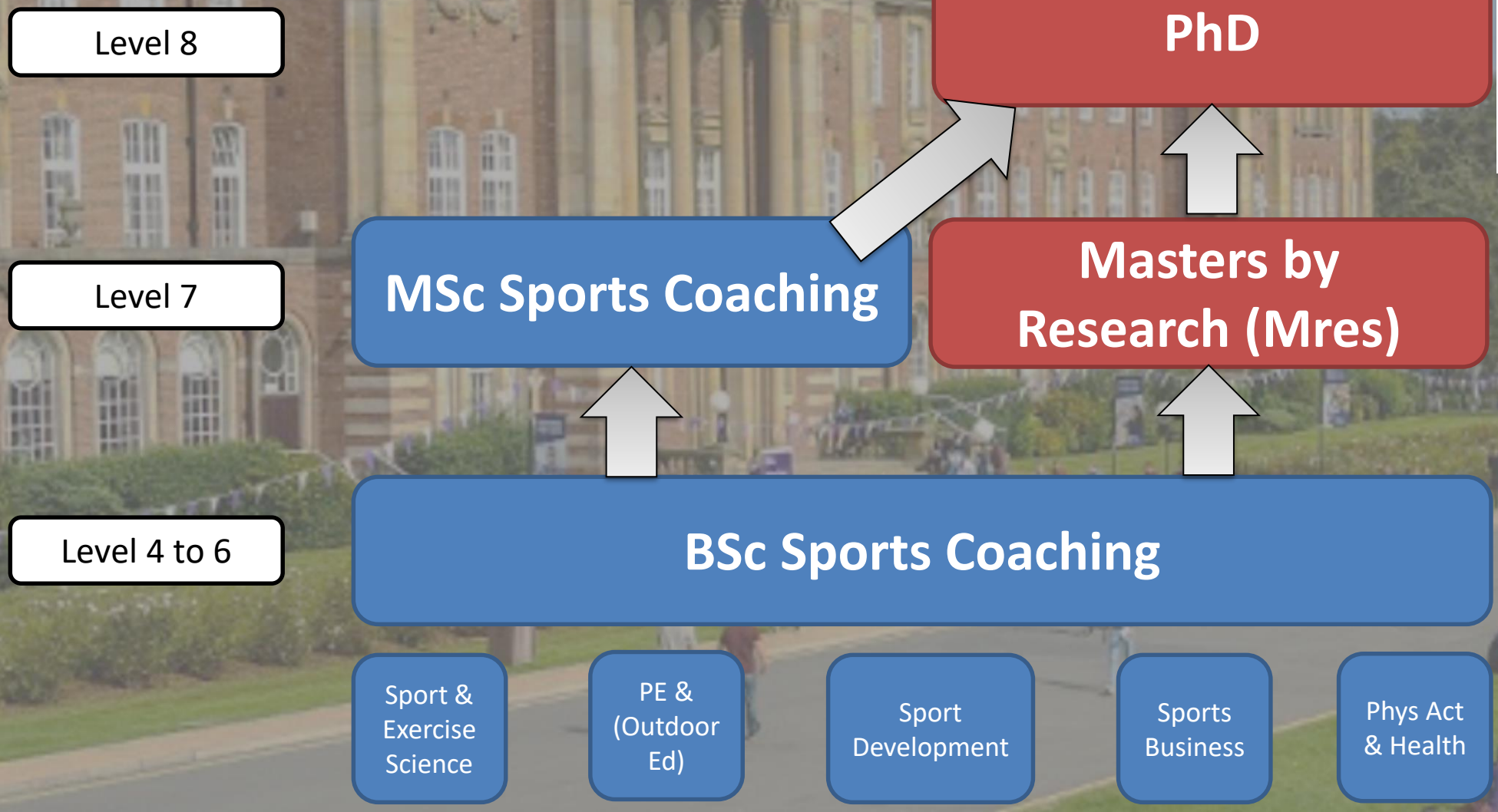
- Research training course
- Investigate own research questions
- Supervisory support
- 1 year FT / 2 years PT

Level 4 to 6

**BSc Sports Coaching**

- Sport & Exercise Science
- PE & (Outdoor Ed)
- Sport Development
- Sports Business
- Phys Act & Health

# Our Programmes




- Supervised research programme
- New knowledge to
- Intended to develop academic researchers
- 3-6 Years

# Our Programmes

- Designed for individuals who wish to advance their professional practice and further their career
- Aims to develop researching professionals
- 4-5 Years – PT Study only

# Doctor of Professional Practice in Sport

**DProf Student**

## Problems In Practice

*'Enhance the knowledge, skills and expertise of professionals working within sport to develop innovative, evidence-led solutions to the problems they face'*

## Research Solutions

LEEDS BECKETT UNIVERSITY

# Doctor of Professional Practice in Sport

**DProf Student**

*Problems In Practice*

*Research Solutions*

Coaching Topics

- Coach Education / Development Practice
- Coaching Practice
- Scientific Support Practice
  - S&C
  - Sport Scientist
  - Nutrition
  - Psychologist
  - Performance Analysis

Other Disciplines

- Sport Business Practice (e.g., Leadership)
- Sport Development Practice (e.g., Policy Design)
- Physical Educator Practice (e.g., Curriculum)

LEEDS BECKETT UNIVERSITY

# Doctor of Professional Practice in Sport


**Programme Aims (QAA, 2014)**

- Evaluate **theoretical aspects of expertise** that allows you to benchmark your current practices and future aspirations within your industry
- Explore your **current professional practices** to identify potential problems within your role
- Understand the **research process**, to apply creative thinking, to solve your practical based problems
- Develop **communication skills** that allows the submission of work for publication
- Make an **original contribution** to the enhancement of professional practice within your field

# DProf Sport Info

- 4 year Part-time programme (starts every October)
- Phase 1 (1.5 years) - Taught Component
- 3 Learning Units (5 x 3 day learning blocks)
  - Understanding Expertise in Professional Practice (Andy Abraham)

This unit will provide an overview of the cognitive and social factors that define a profession and apply this to a student's personal practice in their sport discipline.

  - Sense-making in Professional Practice (Bob Muir)

This unit aims to support students in exploring and unpacking their professional practices within sport from different perspectives in order to facilitate deeper levels of reflection; and consider how culture and traditional ways of working shape and influence your practices

  - The Research Process (Julian North)

This unit presents research as the process of applying creative thinking in a logical way to the acquisition and creation of knowledge informed by theory and practice and to inform theory and practice.

LEEDS BECKETT UNIVERSITY

**https://www.leedsbeckett.ac.uk/carnegie-school-of-sport/research/doctor-of-professional-practice-in-sport/**

# DProf Sport Info

- Phase 2 (approx. 2.5 Years) – Independent Work (Supervised by 2 academics)
- Regular Check Ins – Confirmation of Registration, Annual Progressions
- Submission / Outputs
  - Thesis
  - Practical output (e.g., website, professional blog, handbook or manual, videos, strategic document) - allows candidates to demonstrate their evidence-based, novel solution to their practical 'real-world' problem
  - Academic dissemination (Conference Presentation / Journal Article)
  - Final Viva.

LEEDS BECKETT UNIVERSITY

**https://www.leedsbeckett.ac.uk/carnegie-school-of-sport/research/doctor-of-professional-practice-in-sport/**

LEEDS BECKETT UNIVERSITY
CARNEGIE SCHOOL OF SPORT

# **Combining Research & Practice:** The Doctor of Professional Practice in Sport

**Prof. Kevin Till**

@KTConditioning

K.Till@Leedsbeckett.ac.uk